

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/717,824	BANTON, MARTIN E.
	Examiner Aklilu K. Woldemariam	Art Unit 2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 05/19/2004.
2.  The allowed claim(s) is/are 1 (now remembered 1 for issue).
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All
  - b)  Some\*
  - c)  None of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

- 1.  Notice of References Cited (PTO-892) ✓
- 2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 11/13/08.
- 4.  Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 5.  Notice of Informal Patent Application
- 6.  Interview Summary (PTO-413)  
Paper No./Mail Date 11/13/08 ✓
- 7.  Examiner's Amendment/Comment ✓
- 8.  Examiner's Statement of Reasons for Allowance ✓
- 9.  Other \_\_\_\_\_.

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Nickerson Michael on February 13, 2008.
3. The application has been amended as follows:

*In the specification on page 1, in lines 23-24, "LP= [X<sub>-n</sub>, X<sub>-(n-1)</sub>, ... X<sub>0</sub>, ... X<sub>n-1</sub>, X<sub>n</sub>]" replace with "LP= [Z<sub>-n</sub>, Z<sub>-(n-1)</sub>, ... Z<sub>0</sub>, ... Z<sub>n-1</sub>, Z<sub>n</sub>], n is integer."*

*In the specification on page 3, in line 8, "LP= [X<sub>-n</sub>, X<sub>-(n-1)</sub>, ... X<sub>0</sub>, ... X<sub>n-1</sub>, X<sub>n</sub>]" replace with "LP= [Z<sub>-n</sub>, Z<sub>-(n-1)</sub>, ... Z<sub>0</sub>, ... Z<sub>n-1</sub>, Z<sub>n</sub>], n is integer."*

*In the specification on page 2, in line 4, after "HP = [Y<sub>-m</sub>, Y<sub>-(m-1)</sub>, ... Y<sub>0</sub>, ... Y<sub>m-1</sub>, Y<sub>m</sub>]" insert -m is integer-.*

*In the specification on page 3, in lines 13-14, after "HP = [Y<sub>-m</sub>, Y<sub>-(m-1)</sub>, ... Y<sub>0</sub>, ... Y<sub>m-1</sub>, Y<sub>m</sub>]" insert -m is integer-.*

*In Claim 1, please replace the subject matter in the claim with the following:*

1. *Method for descreening a digital image comprising:*
  - (a) *selecting a cut-off frequency and designing therefrom a one-dimensional separable low pass filter (LP), one-dimensional separable low pass filter LP being a row vector having entries [Z<sub>-n</sub>, Z<sub>-(n-1)</sub>, ... Z<sub>0</sub>, ... Z<sub>n-1</sub>, Z<sub>n</sub>], n is integer;*

- (b) obtaining a two-dimensional separable filter (LPP) by performing the operation:  $LP^* X LP$ ,  $LP^*$  being a column vector having the same entries as one-dimensional separable low pass filter  $LP$ , two-dimensional separable filter  $LPP$  having dimensions given by:  $\{2n+1, 2n+1\}$ ,  $n$  is integer;
- (c) generating a two-dimensional contour plot for the two-dimensional filter  $LPP$ ;
- (d) designing a one-dimensional separable high pass filter (LLP), one-dimensional separable high pass filter  $HP$  being a row vector having entries  $[Y_{-m}, Y_{-(m-1)}, \dots, Y_0, \dots, Y_{m-1}, Y_m]$ ,  $m$  is integer;
- (e) obtaining a two-dimensional separable filter .(HPP) by performing the operation:  $LLP^* X LLP$ ,  $LLP^*$  being a column vector having the same entries as one-dimensional separable high pass filter  $LLP$ , two-dimensional separable filter  $HPP$  having dimensions:  $\{2m+1, 2m+1\}$ ,  $m$  is integer;
- (f) generating a two-dimensional contour plot for the two-dimensional filter  $HPP$ ;
- (g) generating a two-dimensional filter (ONE) when the two-dimensional contour plot for the two-dimensional separable filter  $LPP$  overlaps the two-dimensional contour plot for the two-dimensional separable filter  $HPP$ , two-dimensional filter  $ONE$  having the same dimensions of two-dimensional separable filter  $HPP$  with the only non-zero entry of value 1 being located at the center of two-dimensional filter  $ONE$ ;
- (h) subtracting two-dimensional separable filter  $HPP$  from two-dimensional filter  $ONE$  to create matrix (HPPinv);
- (i) convolving two-dimensional separable filter  $LPP$  with matrix  $HPPinv$  to obtain non-separable filter DSCRN having dimensions:  $\{2m+2n+1, 2m+2n+1\}$ ;

(j) generating a two-dimensional contour plot for non-separable filter DSCRN;  
and

(k) selecting two-dimensional separable filter LLP and two-dimensional  
separable filter HHP when the two-dimensional contour plot for non-separable filter  
DSCRN is an approximation to a desired circular symmetry;

(l) repeating (a)-(j) when the two-dimensional contour plot for non-separable  
filter DSCRN is not an approximation to a desired circular symmetry;

(m) electronically applying the selected two-dimensional separable filter LLP  
to a digital image to produce a first filtered image;

(n) electronically applying the selected two-dimensional separable filter HHP  
to a digital image to produce a second filtered image; and

(o) subtracting the second filtered image from the first filtered image to,  
generate a descreened digital image.

#### **REASONS FOR ALLOWANCE**

4. Claim 1 is allowed over the prior art of record.

5. The following is an examiner's statement of reasons for allowance: In addition to  
the teachings of claim 1, as a whole, closest art of record failed to teach or suggest  
among other thing,

"(g) generating a two-dimensional filter (ONE) when the two-dimensional contour  
plot for the two-dimensional separable filter LPP overlaps the two-dimensional contour  
plot for the two-dimensional separable filter HPP, two-dimensional filter ONE having the

*same dimensions of two-dimensional separable filter HPP with the only non-zero entry of value 1 being located at the center of two-dimensional filter ONE;*

- (h) subtracting two-dimensional separable filter HPP from two-dimensional filter ONE to create matrix (HPPinv);*
- (i) convolving two-dimensional separable filter LPP with matrix HPPinv to obtain non-separable filter DSCRN having dimensions: {2m+2n+1,2m+2n+1};*
- (j) generating a two-dimensional contour plot for non-separable filter DSCRN."*

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aklilu k. Woldemariam whose telephone number is 571-270-3247. The examiner can normally be reached on Monday-Thursday 6:30 a.m-5:00 p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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02/11/2008



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